CLAIMS

1. A manual bone anchor placement device, comprising:

a manually actuatable lever;

a resilient element;

a force translator comprising a distal end and a proximal end, the proximal end being coupled to the lever and the distal end being coupled to the resilient element, the force translator transmitting a force exerted on the lever to the resilient element; and

a rotator coupled to the resilient element, the rotator receiving force from the resilient element and rotating in response thereto.

2. The manual bone anchor placement device of claim 1, further comprising a securing element coupled to the rotator, the securing element mating with a bone anchor screw and rotating when the rotator rotates, thereby applying a torque on the bone anchor screw and placing the bone anchor screw into bone.

3. The manual bone anchor placement device of claim 2, wherein the securing element comprises teeth and wherein the rotator comprises at least one protruding portion capable of engaging the teeth.

4. The manual bone anchor placement device of claim 3, wherein the at least one protruding portion comprises a pawl.

5. The manual bone anchor placement device of claim 1, further comprising a handle including a groove for receiving a suture attached to a bone anchor screw.

6. The manual bone anchor placement device of claim 1, further comprising a connector with a first end and a second end, the first end coupled to the force translator, and the second end coupled to the lever.

7. The manual bone anchor placement device of claim 6, wherein the lever comprises a slot for receiving the connector.

8. The manual bone anchor placement device of claim 6, wherein the lever further comprises a pivot, the connector being positioned below the pivot, and the force translator receiving a push force when the lever is manually actuated.

9. A manual bone anchor placement device, comprising:

a manually actuatable lever;

a force translator comprising a distal end and a proximal end, the proximal end receiving force from the lever;

a rack coupled to the distal end of the force translator, receiving force from the force translator, the rack moving linearly into an engaging position in response to the force from the force translator;

a rotator positioned in close proximity to the rack, engaging with the rack when the rack moves into the engaging position and rotating in response to engagement by the rack.

10. The manual bone anchor placement device of claim 9, further comprising a coupler coupled to the rotator for mating with a bone anchor screw, and for rotating when the rotator rotates to place the bone anchor screw into bone.

11. The manual bone anchor placement device of claim 9, further comprising a handle including a groove for receiving a suture attached to a bone anchor screw.

12. The manual bone anchor placement device of claim 9, wherein the rotator is selected from the group consisting of a ratchet wheel, a pawl, a pinion, and a gear.

13. The manual bone anchor placement device of claim 9, further comprising a connector that connects the force translator to the lever.

14. The manual bone anchor placement device of claim 9, wherein the lever further comprises a pivot, the connector being positioned below the pivot, the force translator receiving a push force when the lever is manually actuated.

15. The manual bone anchor placement device of claim 9, wherein the lever further comprises a pivot, the connector being positioned above the pivot, the force translator receiving a pull force when the lever is manually actuated.

16. The manual bone anchor placement device of claim 9, further comprising a spring that encircles an end of the force translator proximal to the rack.

17. The manual bone anchor placement device of claim 10, further comprising a spring that encircles an end of the coupler proximal to the rotator.

18. The manual bone anchor placement device of claim 9, wherein the distal end of the force translator comprises a first wedge member, and wherein the device further comprises a tubular member coupled to the lever, the tubular member having a second wedge member positioned in close proximity to the first wedge member for transmitting force from the lever to the force translator through the first wedge member.

19. The manual bone anchor placement device of claim 9, wherein the force translator comprises a plunger for receiving pneumatic or hydraulic force when the lever is actuated.

20. A manual bone anchor placement device, comprising:

a manually actuatable lever;

a driver rod comprising threads;

a cup coupled to the lever, positioned over the threads of the driver rod, and movable axially along the driver rod upon manual actuation of the lever; and

a washer positioned over the threads of the driver rod, engaging the cup upon manual actuation of the lever, translating force from the lever to the driver rod, and rotating the driver rod.

21. The manual bone anchor placement device of claim 20, further comprising a coupling element for mating with a bone anchor screw, and for rotating when the driver rod rotates to place the bone anchor screw into bone.

22. The manual bone anchor placement device of claim 20, further comprising a force translating member coupled to the lever at a pivot and coupled to the cup by flanges on the cup, for translating force from the lever to the cup.

23. The manual bone anchor placement device of claim 20, further comprising a handle including a groove for receiving a suture attached to a bone anchor screw.

24. The manual bone anchor placement device of claim 20, wherein the washer further comprises at least one engaging pin for engaging the cup and the cup comprises holes for receiving the at least one engaging pin.

25. The manual bone anchor placement device of claim 20, wherein the cup further comprises at least one engaging pin for engaging the washer and the washer comprises holes for receiving the at least one engaging pin.

26. A buttress-shaped bone anchor screw comprising a micropolished eyelet for receiving a suture.

27. The bone anchor screw of claim 26, wherein the eyelet is circular, ellipsoidal, or teardrop shaped.

28. A protective cover for protecting a bone anchor screw comprising a base for engaging with a bone anchor placement device, a sheath coupled to the base for surrounding and protecting a bone anchor screw, the sheath being collapsible for uncovering the bone anchor screw when the bone anchor screw is placed into bone.

29. A kit comprising a flexible, molded sleeve for enclosing a suture therein and at least one retaining clip for preventing the suture from slipping out of the sleeve.

30. The kit of claim 29, wherein the sleeve further comprises a Teflon® material.

31. The kit of claim 29, further comprising a buttress-shaped bone anchor screw comprising a micropolished eyelet for receiving a suture.

32. The kit of claim 31, wherein the buttress-shaped bone anchor screw is pre-attached to a suture.

33. The manual bone anchor placement device of claim 1, 9, or 20, further comprising:

a head assembly;

a recessed anchor mount movably disposed within the head assembly; and

an actuation mechanism coupled to the recessed anchor mount.

34. The manual bone anchor placement device of claim 33, wherein the actuation mechanism is selected from the group consisting of a push wire and a pull wire.

35. The manual bone anchor placement device of claim 33, wherein the actuation mechanism actuates the recessed anchor mount between a recessed position and an advanced position.

36. The manual bone anchor placement device of claim 33, wherein the anchor mount includes an outer surface comprising at least one flat surface and the head assembly defines a core comprising a mating shape.

37. The manual bone anchor placement device of claim 33 further comprising a bone anchor releasably engaged to the anchor mount.

38. The manual bone anchor placement device of claim 37, wherein the anchor mount includes a groove for accommodating a suture attached to the bone anchor.

39. A manual bone anchor placement device, comprising:

a handle;

a shaft extending in a distal direction from the handle;

a head assembly disposed at a distal end of the shaft;

a recessed anchor mount movably disposed within the head assembly; and

an actuation mechanism coupled to the recessed anchor mount.

40. The manual bone anchor placement device of claim 39, wherein the actuation mechanism is selected from the group consisting of a push wire and a pull wire.

41. The manual bone anchor placement device of claim 39, wherein the actuation mechanism actuates the recessed anchor mount between a recessed position and an advanced position.

42. The manual bone anchor placement device of claim 39, wherein the anchor mount includes an outer surface comprising at least one flat surface and the head assembly defines a core comprising a mating shape.

43. The manual bone anchor placement device of claim 39, wherein the actuation mechanism is situated within a channel disposed on the handle.

44. The manual bone anchor placement device of claim 39, wherein an actuator operates the actuation mechanism disposed on the handle.

45. The manual bone anchor placement device of claim 40, wherein the actuation mechanism comprises a material selected from the group consisting of spring steel and nitinol.

46. The manual bone anchor placement device of claim 39 further comprising a bone anchor releasably engaged to the anchor mount.

47. The manual bone anchor placement device of claim 39 further including a stop disposed within the head assembly.